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A 3 X 3 CLASSIFICATION OF SCIENCE-AND-RELIGION[1]

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The variety of discussions on the relationship between science and religion is confusing. In this paper I propose a classification of areas of discussion. This classification distinguishes three views of religion and three challenges related to the rise of the sciences. Therefore, the classification has 3 x 3 areas. It is argued that this classification has certain advantages over other existing ones.

1. THREE CHALLENGES

A synthesis of religious convictions and pre-scientific insights is often assumed to have characterised the late Middle Ages. A major example of a systematic synthesis is the work of Thomas Aquinas (13th century). A literary expression of an integration of theology, ethics, politics and geocentric astronomy is Dante's *Commedia* about hell, purgatory and paradise (early 14th century). In discerning the order of things, the higher creatures trace God's footsteps, as Beatrice tells the poet in the first canto of Paradise. In such a medieval synthesis, ideas from Greek philosophers (Plato, Aristotle), from Scripture and from earlier theologians came together. Medieval views had a static character and a hierarchical structure, and they were geocentric. The order, understood in terms of Aristotle's doctrine of 'natural place' was not merely understood as something factual. The order was also normative, as is still reflected in some uses of the words 'natural' and 'counter-natural'.

It is dubious whether a single and unique medieval synthesis actually existed; conflicts between faith and philosophy occurred, no system was complete and comprehensive, and people disagreed: "The learned Latin culture of the 13th century was no more unitary than ours" (Mark D. Jordan).[2] However, as a construction of later times the mythical medieval synthesis offers a nice contrast to our situation.

a. *New knowledge* separates us from any medieval synthesis. The geocentricism of medieval astronomy has been abandoned. In biology and geology static views have been replaced by an evolutionary one with time scales far exceeding any scholarly chronology based on the Bible and on knowledge about the history of other cultures in Egypt and Mesopotamia. Not only have we become aware of a long pre-human history of the earth, but evolutionary biology and the neurosciences have given humanity a new position among other living beings. Some people have attempted to adapt theology to contemporary changes in our view of the world, for instance by seeing God's creative activity in the evolutionary process. Ascribing the problems for theology to "an outmoded world picture" (Wildiers 1982, 235) is, however, incomplete and inadequate. It is not only the knowledge of nature that has changed.

b. Ideas about the *nature of knowledge* have changed as well. Methods for acquiring knowledge have changed, as is exemplified by the role of experiments and of mathematical idealisation. At the same time, with the rise of science the conception of science changed. The changes at this level during the seventeenth century "were those that most clearly, in retrospect, mark this century as the age of the scientific revolution" (McMullin 1990, 28). The ideal of purely deductive or purely inductive knowledge was gradually replaced by the ideal of hypothetico-deductive (or retroductive) reasoning. The eighteenth century philosopher Immanuel Kant made the creative role of the subject more explicit. According to him, the world as it is in itself is inaccessible; the accessible, knowable world is the world as we describe it in terms of our categories. Subsequent developments have shown that Kant's categories and forms of perception, such as Euclidean space, were not necessary. But the insight still stands that knowledge is shaped by our categories, and not only by the reality it purports to be about. The shift to the subject of knowledge was followed by an increased emphasis on the role of language and context, by a decline in the belief in secure foundations of knowledge, and by disputes over the demarcation between science and other human activities. Theology has also responded to the emphasis on the role of the human subject, for instance by focusing on the personal (*e.g.*, Martin Buber's distinction between 'I-thou' relations and 'I-it' relations).

c. A third change regards *our appreciation of the world.* The medieval synthesis took the world to be God's good creation. Today some consider the world existentially meaningless, neutral or ambivalent, whereas other thinkers, both secular and religious ones, find our reality meaningful. The emergence of mixed feelings about the world can be illustrated by the poem John Donne wrote in 1611 during a time of turmoil in Europe, with the oft quoted line, "And new philosophy calls all in doubt". It is dubious whether the poem's original intention was a lamentation over the loss of the medieval world view, but this passage has often been used to refer to this loss.[3] Over a century later, the changing appreciation of the world is exemplified by the cultural impact of the earthquake that destroyed Lisbon in 1755. The French philosopher Voltaire gave his *Poème sur le désastre de Lisbonne* (1756) the subtitle "Or an examination of the axiom 'All is well'". This theme returns in Voltaire's novel *Candide ou l'optimisme* (1759). There the philosopher Pangloss defends the view that this is the best of all possible worlds. The more Pangloss, who stands for Leibniz, argues his case, the less convincing it becomes. Another illustration of changes in the appreciation of the world, again a century later, can be taken from Dostoyevsky's *The Brothers Karamazov*. One of the brothers, Ivan, wants to return to God his ticket of entry into the world. The suffering in this world is not justified by heavenly meaning. "And if the sufferings of children go to swell the sum of sufferings which was necessary to pay for truth, then I protest that the truth is not worth such a price."[4]

Changes in the appreciation of the world have affected theology as well. This is most explicit in those theologians who have moved from an understanding of God in metaphysical terms, say God as the Ground of Being, to an understanding of God as being on the side of the victims or of the poor. The 'Death of God' discussion of the 1960s reflects the stronger emphasis on human autonomy in creating knowledge, but it also fits in with a strong sense of the reality of horror and injustice in the world.

2. EXISTING CLASSIFICATIONS OF DISCUSSIONS ON RELIGION-AND-SCIENCE

We have just considered challenges to religion as they have arisen in the last couple of centuries. Below, I will argue that it is helpful to distinguish three different views of religion, which emphasise truth, experience, and tradition. Together, these will result in a classification of discussions on the relationship between science and religion in which nine areas are distinguished. Before coming to my proposal, I will first point out some differ-

ences with existing classifications, especially one which is widely used, namely the one provided by Ian Barbour.

Conflict, independence, dialogue and integration.

The field of religion and science is regularly classified by means of four categories, here quoted from Ian Barbour (1988, 1990: 3-30; Barbour 1966 offers similar distinctions):

1. Conflict
   1.1. Scientific materialism
   1.2. Biblical literalism
2. Independence
   2.1. Contrasting methods
   2.2. Differing languages
3. Dialogue
   3.1. Boundary questions
   3.2. Methodological parallels
4. Integration
   4.1. Doctrinal reformulation
   4.2. Systematic synthesis

The categories 'conflict', 'independence', 'dialogue' and 'integration' express strategies for handling conflicts: choosing either one position or the other (conflict), separating the contending claims as different and independent, and adapting one's views to some extent (dialogue) or accommodating both claims in an interwoven whole (integration).

The four categories do not pay attention to the question as to which kind of religion is supposed to be in conflict with, independent from, or to be integrated with, which kind of science. However, the conclusion that there is a 'conflict' between science and religion (or that they are independent, or that they can be integrated), can be drawn for various reasons. Classification by means of general strategical stances may be helpful, for instance in a sociological survey (*e.g.*, Barker 1981). However, such a classification is not the most helpful way of approaching the field in a study which focuses on the intellectual problems of the interaction. In that case, the central issues should be the underlying perceptions of science, of religion, and of the problems involved in relating these two human enterprises. This brings us to considerations about the nature of knowledge, especially the relation between theories and experience, and to considerations regarding the nature of reality, the metaphysical significance, if any, of the content of scientific theories.

Barbour is in a position to dismiss 'scientific materialism' by lumping it together with 'biblical literalism' under the heading *conflict*. The suggestion is that both are mistaken in relying on an all-too-straightforward realism with respect to texts and theories. This is an attractive rhetorical move, but not adequate since it neglects the fact that the challenges are different. 'Biblical

literalism' ('creationism') collides with new knowledge and with modern ideas about the nature of knowledge, whereas 'materialism' tries to accommodate maximally to these new insights. 'Scientific materialism' is much more of an intellectual challenge than Biblical literalism. Biblical literalism moves from experiences, in this case the words of a text, directly to convictions. The path from experience to theories is much more elaborate in science. This distance between convictions and experience carries over from science to 'scientific materialism', which is therefore – at least in this respect – much more sophisticated than 'Biblical literalism'.

Clustering by strategical stance also lumps together various views of *independence*. This too is unsatisfactory, as underlying views of religion may be very different. For instance, some pleas for independence are based upon the distinction between primary and secondary causation, maintaining a metaphysical understanding of religion as dealing with the Primary Cause of everything. But independence might also be the strategy adopted when religion is understood as dealing with moral and emotional issues in human existence. It is not illuminating to treat such different ways of separating science and religion together.

The scheme not only lumps together arguments and positions which are different in fundamental respects, but also separates views which are similar in important respects. A materialistic view of religion, here listed under 'conflict', may be close to a metaphysical 'integration', since both expand the realms of religion and science to encompass the whole of reality.

Viggo Mortensen (1987, 1988) uses two major categories to describe the field, restriction and expansion. One might defend the co-existence of science and religion by arguing that they deal with different, restricted aspects of reality. Or one might consider their relation by arguing that each deals, in principle, with the whole of reality. The attractive feature of this distinction between restriction and expansion is that it focuses immediately on the underlying views of science and of religion. Though the focus on underlying views of the scope of science and of religion is attractive, the two categories do not pay attention to the way the challenges to religion deriving from science are perceived.

Another scheme, which conceives of eight (4x2) possible relationships between science and theology, has been developed by Peacocke (1981, xiiiff.; see also 1993, 20) and Russell (1985, 49f). Russell distinguishes four 'dimensions' in Peacocke's proposal, namely approaches, languages, attitudes, and objects. Along each of these four dimensions, science and theology may be considered as similar (and thus fairly close to each other, positively related) or dissimilar. I appreciate the four dimensions, which I

understand as referring to epistemological, semantical, axiological, and ontological issues. My list of three challenges is somewhat similar, except that I add explicitly the issue of the content of scientific knowledge. I also refer to epistemological and axiological issues; I prefer to treat issues of semantics and ontology when they come up in the reflection on knowledge and views of knowledge, rather than that I list them separately in advance. Whether reflections in these four areas of discussion lead to a "positive and reconciling" or a "negative and non-interacting" relationship (Peacocke 1993, 20) is to be seen; I would not make the result an element in the classification itself, and I doubt that a single scale from negative to positive is adequate here.

A disadvantage of this scheme is that it is restricted to theology, emphasising "affirmations of Christian theology" (Peacocke 1981, xiii). Such a view of religion "emphasizes the cognitive aspects of religion and stresses the ways in which church doctrines function as informative propositions or truth claims about objective realities" (Lindbeck 1984, 16). In my opinion this leaves important areas of discussion out of sight. The natural sciences have consequences for theology, understood as cognitive affirmations, but also for experience and tradition, which are central notions in other views of theology. Therefore, I propose a more elaborate scheme of nine areas of discussion. Before coming to that scheme, I will briefly present three different views of religion.

3. THREE VIEWS OF RELIGION

Above I have listed three challenges to religion as it relates to the natural sciences and other developments that have occurred over the last few centuries: a. *new knowledge*, b. *new views of knowledge* and c. a less positive *appreciation of the world.*

Our understanding of religion has also diversified. Each particular way that religion is understood gives a certain shape to its interaction with the natural sciences. George Lindbeck (1984) has attempted to clarify the nature of ecumenical agreements by distinguishing between three views of religions and religious doctrine. I will adapt his categories here for my purposes. The three views of religion will be exemplified below, with the explication of the classificatory scheme. They are core elements which are combined in various ways in actual religions and theologies.

1. *Cognitive* claims are central to some views of religion. Religion, and especially its systematic articulation in theology, is an attempt to grasp the true, ultimate nature of reality. George Lindbeck argued in his *The Nature of*

Doctrine (1984, 16) that such a propositional-cognitivist view "was the approach of traditional orthodoxies (as well as many heterodoxies), but it also has certain affinities to the outlook on religion adopted by much modern Anglo-American analytical philosophy with its preoccupation with the cognitive or informative meaningfulness of religious utterances".

2. Religious *experience*, or religious interpretations of experience, are at the heart of religion according to other views, especially in liberal positions influenced by Schleiermacher. Lindbeck calls this an 'experiential-expressivist' view of religion; "it interprets doctrines as noninformative and nondiscursive symbols of inner feelings, attitudes, or existential orientations" (1984, 16).

3. Religions can also be seen as *traditions* by which people live, which shape their lives, both individually and communally. This aligns well with anthropological and sociological approaches. Lindbeck speaks of a 'cultural-linguistic' view of religion. Religions resemble languages and forms of life; they are "idioms for the construction of reality and the living of life" (18).

4. THE 3 X 3 CLASSIFICATION

Given these two ways of structuring the arena of debate, in terms of the three challenges to religion and in terms of the three views of religion, a total of nine areas of debate may be distinguished. These are areas of discussion; a single author may well be engaged in more than one of these. Ideally, each theological or philosophical proposal would cover all these areas; the scheme can be seen as a way to delineate the target area.[5] However, in practice, most authors focus on one area, a single column, or a single row, or at least have a characteristic emphasis there. For instance, the theologian Hefner writes in intense dialogue with an anthropological understanding of religion, and thus most of his writings primarily deal with the areas of discussion in the third column. However, this does not keep him from cognitive claims. Rather, "myth provides a picture of *the way things really are*" (Hefner 1993, 202).

One could recover the various strategies distinguished by Barbour in some of these areas, especially in the one which focuses on cognitive elements in religion in relation to new knowledge. I prefer to distinguish these strategies as follows: i. conflicts over specific issues; ii. separation of domains and claims; iii. partial adaptation, for instance by developing models which borrow from the sciences to explicate religious notions; and iv. the development of an integrated view, and the debates over various integrated systems, or world views.

After summarising the scheme, I will give some examples of discussions on relations between science and religion in the various areas.

Character of religion:	1. Cognitive claims	2. Experience	3. Tradition
Challenge:			
a. New knowledge	1a. Content-oriented: i. Conflicts ii. Separation iii. Partial adaptation iv. Integration	2a. Positive: New opportunities for experiential religion? Challenge: Explanations of religious experience in neurospsychological terms.	3a. Religious traditions as products of evolution.
b. New views of knowledge	1b. Philosophy of science and opportunities for theology	2b. Philosophical defences of the legitimacy of taking religious experiences seriously as data.	3b. Religious traditions as 'language games', but not thereby exempt from being approached in evolutionary terms.
c. Appreciation of the world	1c. A new covenant between humans and the Universe?	2c. Ambivalence of the world and implications for the concept of God.	3c. Ultimate tolerance and a basis for hope, or are religions local traditions without universal claim?

Figure 1: A classification for areas of discussion concerning the relationship of religion and science, with some examples.

Classifications like those of Barbour, and of Peacocke and Russell, discussed above, give most prominence to the way cognitive claims in religion (theology) and in science are related. This is only the first column, and often only one area (1a), in the scheme proposed here. And especially with respect to this area I intend to make it clear that debates do not stand in isolation, but require consideration of other views of religion (other columns) and other views of the challenges (other horizontal rows).

1a. Cognitive claims in religion and new knowledge about the world.

i. Various conflicts have arisen over the truth of the Bible: the world either came into being a few millennia ago or it has existed for billions of years; there has either been a world-wide flood or there has not; the species are either fixed or they are not; the Sun either stood still at Gibeon (Joshua 10: 12) or it did not, etc. Conflicts, such as those related to Galileo and Darwin, seem to be about knowledge and cognitive claims in the Bible. As I have argued elsewhere (Drees 1996, 54-77), the events also reflected conflicts among believers about the understanding of religion and conflicts among scientists about the interpretation of science. Hence, whereas the popular image might be that science and religion have collided over facts, further analysis shows that many more issues are involved, such as the flexibility of religious expressions (other strategies), the understanding of religion (other columns) and of knowledge (other rows).

ii. Separation as a strategy may be a consequence of new knowledge, say biological explanations for the apparent design of organisms and organs. However, if the strategy is separation, the discussion is not so much about details of new knowledge, but rather about the nature and scope of scientific understanding (the next row). As examples of supporters of such a position one might consider those who adhere to the distinction between primary and secondary causes, but also my own religious view of naturalism in combination with a naturalistic view of all phenomena.

iii. Examples of partial adaptation of religious views to new knowledge are attempts to find a model for divine action in the context of quantum physics, chaotic processes or via top-down causation (e.g., Russell et al. 1993, 1995).

iv. Among attempts to develop an integrated world view have been Pierre Teilhard de Chardin's evolutionary theology, and process theology drawing on the metaphysical notions of Alfred N. Whitehead and Charles Hartshorne. A less-open attitude towards religion characterises some scientists who dismiss religion as a cognitive mistake which is intelligible on the basis of our psychological constitution and our evolutionary past.

1b. Cognitive claims in religion and the nature of knowledge

The idea that theology should adopt the methodology of the sciences, or that recent insights in general epistemology and semantics provide a fruitful perspective for religion has been defended by various philosophers of religion. As one of them claims, and more seem to believe, "Methodology, not subject matter, has kept theology trailing behind in the age of science" (Murphy 1990, 127). According to Nancey Murphy, relevant parts of theology could be structured as a Lakatosian research programme, including features such as a hard core, auxiliary hypotheses and novel data. Hence, the cognitive claims of theology deserve as much credibility as the cognitive claims of science.

A weaker assimilation in methodological and epistemological respects has been defended by Ian Barbour, when he listed similarities *and* dissimilarities between science and religious belief (Barbour 1974, 69; 1990, 65-92; see also Peacocke 1984, 41-44). Thus, some argue that every theological model or metaphor drawing on the sciences has an 'is' and an 'is-not' component. In my view, such a qualification is important but insufficient (Drees 1994, 258f).

1c. Cognitive claims about the meaning of the Universe. In their popular book on self-organisation, *Order out of Chaos*, Ilya Prigogine and Isabelle Stengers wrote of a 'new covenant' between man and nature. The physicist Freeman Dyson saw in the fundamental characteristics of the universe an indication of purpose, as if the universe in some sense knew that we were going to arrive on the scene; "the universe is an unexpectedly hospitable place" (Dyson 1979, 251). In writing thus, they opposed other scientists who had come to the opposite conclusion. The biologist Jacques Monod, for instance, described everything as the result of pure chance; there would be no objective foundation for meaning or purpose. And near the end of his popular book, *The First Three Minutes* the cosmologist Steven Weinberg wrote: "The more the universe seems comprehensible, the more it also seems pointless" (Weinberg 1977, 155). This debate is not so much about the possibility or plausibility of any concept of a transcendent God, or even an active God, but rather about the way we understand the universe, our place in it, and perhaps its long-term or ultimate future. Within this debate the distinction between conflict, separation, partial adaptation and more fundamental integration seems less fruitful – though one might consider Weinberg and Monod as authors who argue for a view of conflict (envisaging a conflict between human meaning, perhaps even human psychological needs, and the universe as we know it), whereas Prigogine tends towards a partial (or more complete) integration of humanistic concerns and his interpretation of scientific insights.

2a. Religious interpretations of experience and changing knowledge. Some see new opportunities for an experiential religion. These include 'religious empiricists' who seek continuity with the Christian tradition[6] as well as authors who represent 'New Age' ideas. Among the sciences, quantum physics and ecology attract most interest among those who seek to develop religion with an experiential emphasis. Such approaches typically aim at integration, either partial or complete.

Research on the differences between the functioning of the left and right hemispheres of the human cortex has led some to claim that ordinary perception and analysis may be located in the left hemisphere whereas the capacity for experiences of the Absolute would be located in the right hemisphere (*e.g.*, d'Aquili, Ashbrook). In this way, a separation of scientific knowing and religious knowing can help their integration within a larger framework, which is itself linked with the neurosciences. In the end it is an attempt at integration to understand "intense religious and spiritual experience in a more scientific form" (d'Aquili, Newberg 1993, 178). Along these

lines, one finds an entry under 'Neuroepistemology' in the *Encyclopedia of Religion* (d'Aquili 1987). However, the same neurosciences have led others to another conclusion: religious experience is not a special kind of experience, but rather an interpretation given to certain experiences. Explaining religious experiences almost amounts to explaining them away.

2b. Religious experience and the nature of knowledge. Some philosophers of religion, especially Richard Swinburne and William P. Alston, have argued for the legitimacy of religious experiences as data for theology. Another discussion which would, in my view, fit in this area of the scheme is Nancey Murphy's appeal to communal discernment as resulting in novel data for theology.

2c. An experiential view of religion and the appreciation of the world. Some American 'religious naturalists' (see above, 2a), such as Bernard Loomer and William Dean, want to avoid reference to anything inaccessible. There is no relief from the ambiguities of life and death in some realm beyond space and time. Thus, in order to maintain their self-imposed restriction to the experiential realm they prefer to accept ambiguity in God's goodness rather than a resolution of evil through a notion of ultimacy beyond history.[7]

3a. New knowledge and religion as a tradition. On the naturalistic view that will be presented here, religious traditions are products of evolution. As evolved traditions, they have been closely intertwined with the evolution of morality, and more widely with the evolution of humanity. This view of religion and morality could draw upon Richard Alexander's *Biology of Moral Systems* and Ralph Burhoe's view of the role of religion in the evolution of the human species.

3b. Religion as a tradition and new views of knowledge. Drawing on the later work of Ludwig Wittgenstein, some defend the view that religious traditions should be seen as 'language games' or, drawing on Michael Polanyi, as implicit, personal, background knowledge. This seems to grant such traditions a kind of immunity: How could one consider such a framework or background without leaving it, and thereby claiming a detached point of view which does not exist? Against this immunity I believe that the observation that understanding is always relative to a framework does not exclude further analysis of its strengths and weaknesses (Drees 1996, 230-244)..

3c. Traditions and appreciation of the world. The few theologians who take the evolutionary, functional view of religion (as a position in area 3a) very seriously, seek to move beyond a functional view of religious traditions as adaptations which have structured societies. They make claims which transcend any local context, and thereby move from function to truth. The theologian Philip Hefner writes that the locus of the God-question has become "the trustworthiness of the processes of evolution upon which man depends" (Hefner 1970, 10). Thus, he asks "*whether there is ultimately a resonance between man and his world or a dissonance – whether man is fundamentally at home in his world or out of phase with it*" (Hefner 1970, 11f). And the theologian Gerd Theissen seeks to defend the position that reality is, ultimately, tolerant and graceful. I agree with them that religious traditions are to be seen in an evolutionary perspective. However, their shift from functional adaptations in local contexts to ontological claims of universal scope does not seem successful. It is more promising, in my opinion, to accept religious traditions within an integrated, naturalistic understanding of reality as rich, functional adaptations to certain historical contexts in combination with a religious appreciation of naturalism, since reality and its intelligibility do not explain themselves.

A concluding remark. The variety of positions that can be located in the 3 x 3 scheme is in various ways relevant to an argument for a naturalistic view of reality, including religion, and a religious view of naturalism (Drees 1996). Some positions clearly present an alternative view of reality, especially those that seek to defend specific theistic cognitive claims (first column) or the more holist or organic views espoused by 'religious empiricists' (2a). Other parts of the scheme are helpful in understanding religion; this holds for the second, and especially for the third column. On this approach, religion would be one of the phenomena to be explained, rather than a competing explanation.

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NOTES

1. The author expresses his gratitude towards Niels H. Gregersen, Peter Kirschenmann, Arthur Peacocke, Helmut Reich, Robert J. Russell, Christoph Wassermann and various others for helpful criticisms of and comments on an earlier version of this scheme. During the Fifth European Conference on Science and Theology, Russell suggested to call it a typology rather than a classification, since the latter term might suggest that the various categories are mutually exclusive. However, I prefer to speak of a classification, since 'typology' carries other undesirable connotations, of symbolic representation, whereas classification may be, as intended here, "a useful schema for stating some of the problems and disputes" (R. Abelson in *The Encyclopedia of Philosophy*, Vol. 2, ed. P. Edwards (New York: Macmillan, 1967), 314). This paper presents a further development of ideas presented at the 4th ESSSAT conference (Drees 1994); these issues have been discussed at greater length (Drees 1996).
2. This threefold objection is taken from Mark D. Jordan's lecture "'By whom all things were made': Christology and Cosmology in the Thirteenth Century", where he develops his case for tension and diversity by considering Roger Bacon, Thomas Aquinas, and Bonaventure. Lecture held at the conference 'Our Knowledge of God, Christ, and Nature' at the University of Notre Dame, April 1993.
3. Stephen Toulmin (1990, 65ff.) is one of the advocates of the view that the poem is about the decline of the cosmopolis, the sense of cosmic and social order. Toulmin's reading is, however, disputed. Manley (1963, 44) claims that "the passage is usually taken out of context to illustrate the impact of scientific rationalism on the Medieval world picture". Donne's poem can be seen as a methodical religious meditation, similar to the Jesuit exercises (Martz 1947).
4. Quoted from the Constance Garnett Translation, revised by R.E. Matlaw (New York: W.W. Norton, 1976), p. 225f.
5. I owe this metaphor to Arthur Peacocke, who used it during the Fifth European Conference on Science and Theology (Freising, March 1994).
6. *E.g.* Birch (1990), Birch and Cobb (1981), Dean (1986), Ferré (1993), Frankenberry (1992), Griffin (1989), Peters (1992).
7. Another example of discussion in this area is (Stone 1992) with a preface, critical on this issue, by Langdon Gilkey.